

# CHAMP

USU CONSORTIUM  
FOR HEALTH AND  
MILITARY PERFORMANCE



# Dietary Supplement

Deuster/Kemmer/Tubbs/Zeno



# **DS and the Law: DSHEA**



- **The Dietary Supplement Health and Education Act (DSHEA) was passed in 1994 by Congress to:**
  - **Limit impediments to marketing/promoting DS**
  - **Provide for wide availability of DS to consumers**
  - **Enhance information available to consumers**
- **Food and Drug Administration (FDA) given regulatory control over DS**



# **DS and the Law: Purity**



- **Supplements (25%) are contaminated with heavy metals, steroids and/or medications**
- **FDA imposed new regulations in June 2007 that DS must be:**
  - **Produced in a quality manner**
  - **Free of contaminants or impurities**
  - **Accurately labeled**
- **Manufacturers will be required to test all ingredients to ensure quality**



# Combining Supplements

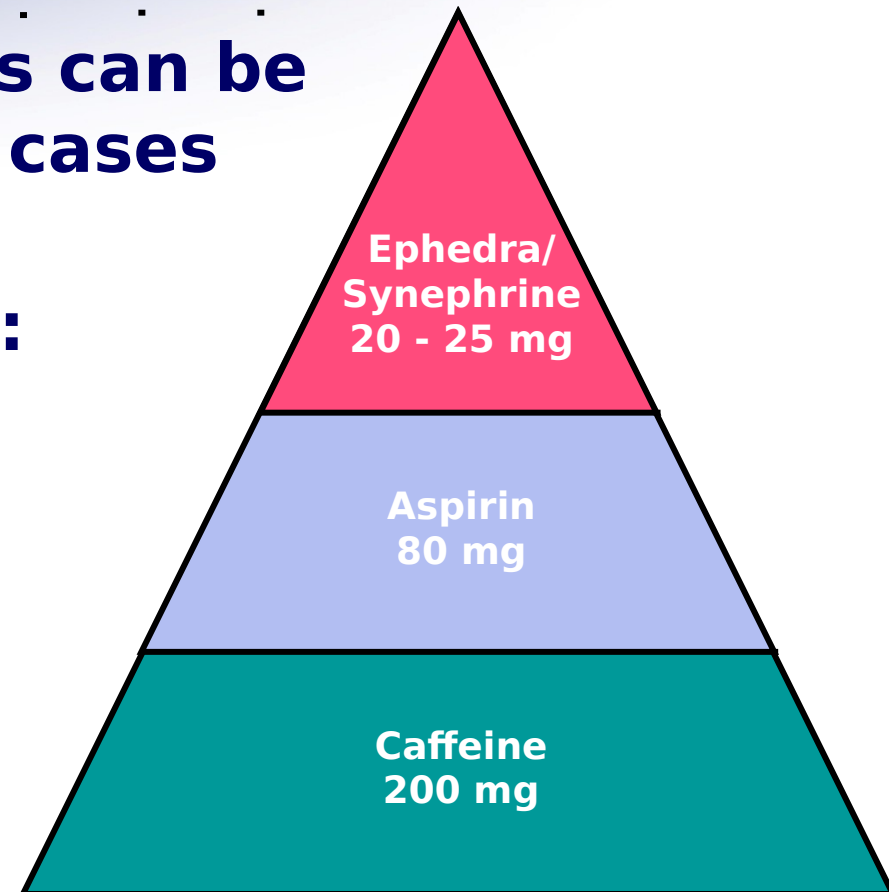


- **Additive or  $1+1=2$** 
  - When two supplements are combined so the effect =  $DS1 + DS2$  (Calcium and Vitamin D)
- **Antagonize or  $1+1=0$** 
  - When one supplement negates the effects so  $DS1 + DS2 = 0$  (Creatine and Caffeine)
- **Synergize or  $1+1=3$** 
  - When two supplements are combined so the effect  $> DS1 + DS2$  (Coenzyme Q10 and fat)
- **Potentiate or  $1+1 = 10$** 
  - Similar to synergism, but to a greater degree

# Stacking Supplements



- **Stacking supplements can be detrimental, in some cases fatal**
- **Examples of stacking:**
  - **Muscle Milk**
  - **NO2**
  - **Hydroxycut**
  - **GAKIC**
  - **Redline**
  - **Creatine + Protein**





# Choosing Supplements



- **Supplements should be clearly labeled with “Seals of Approval”**
- **If supplements do not have app the**





# Multivitamin/Mineral Supplements



- **Multivitamins for Protection from “Vending Machine Malnutrition”**
- **A daily multivitamin/mineral supplement providing < 100% of the RDI for any one nutrient is reasonable for individuals who fail to consume a balanced diet**
- **Avoid “megadose” products supplying 1000% of the RDI for Vitamins A, E, other fat-soluble vitamins, and beta-carotene**

# Supplement Categories



- **Muscle-Building**
- **Performance/Recovery Agents**
- **Weight Loss**
  - Appetite Suppressants
  - Thermogenics
  - Digestion Inhibitors
- **Joint Health**
- **General Health/Well Being**







# Supplements to Avoid



- **Steroids and Steroid-Enhancers**
  - **Linked to liver toxicity, testicular shrinkage, and increased risk of heart attack and stroke**
- **Andro and Andro precursors**
  - **Banned for use by military personnel!**
  - **Listed as Schedule III controlled substances**
- **Hemp Oil**
  - **Contain no significant amounts of THC so is not a psychoactive drug**
- **Ephedra (Ephedra sinica)**



# Supplements to Avoid



- **Synephrine Compounds**
  - Bitter Orange (*Citrus aurantium*) and Country Mallow or Heartleaf (*Sida cordifolia*)
  - Present in “ephedra free” compounds
- **Valerian**
  - Sold as a sleep aid: has a sedative effect
  - Can be dangerous when mixed with alcohol
- **Kava Kava**
  - Linked to liver damage and liver failure!
  - Banned in European countries and Canada



# Supplements to Avoid



- **St Johns Wort**
  - Interferes with a huge number of medications
  - Safety warnings posted in other countries
- **Aristolochia**
  - FDA considers all products containing aristolochic acid to be unsafe and adulterated
- **Usnea or Usnic acid**
  - Used for weight loss and pain relief
  - Warning issued by FDA on this product

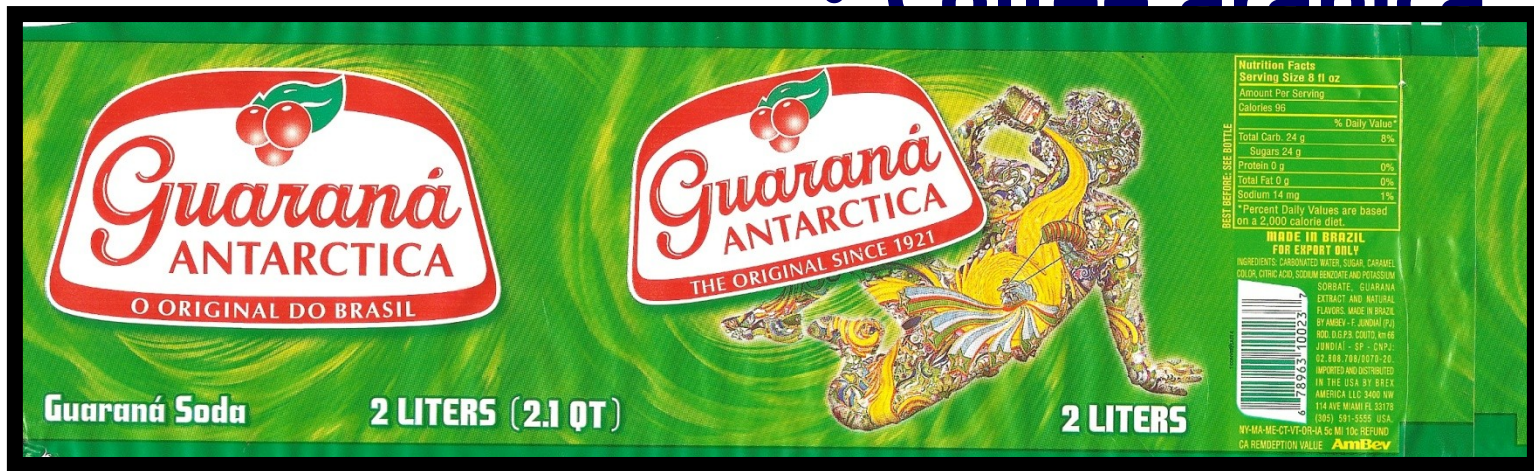
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# Caffeine-Containing Herbals



- Guaraná
- Kola nut
- Yerba maté
- Green and black tea
- Cocoa
- Coffee arabica







# Products without Legitimate Evidence to Support Claims



**Boron  
Oxide**

**Carnitine**

**Ginseng**

**Chrysin**

**CoEnzyme Q10**

**Cordyceps**

**Turmeric**

**DHEA**

**Protein**

**Garcinia Cambogia**

**Ginkgo Biloba**

**Branched Chain AA**

**Glutamine**

**Tribulus Terrestris**

**Conjugated Linoleic Acid**

**5-Hydroxytryptophan**

**Nitric**

**Pycnogenol**

**Pyruvate**

**Taurine**

**Hoodia**

**Whey**



# Potentially Useful Supplements



- **Omega-3 Fatty Acids**
- **Quercetin dihydrate**
- **CoEnzyme Q10**
- **Glucosamine/ Chondroitin Sulfate**
- **Adaptogens**

- **HMB**
- **Creatine**
- **Pre-Probiotics**
- **Zinc**



# Energy Drinks



- **Designed to give a burst of energy**
  - Caffeine: 33 mg - 80 mg per serving
  - Most provide > FDA limit for colas
- **Combines sugars, caffeine, amino acids, B vitamins, herbal products**
  - Taurine, carnitine, creatine, leucine
  - Guarana, ginseng, and/or ginkgo biloba
- **May contain inositol and glucuronolactone**
- **FDA does not regulate energy drinks**





# Energy Drinks



- **Potential side effects**
  - **↑ in heart rate and blood pressure**
    - **Anxiety and nervousness**
- **Taurine: 3 or > times higher than what is typically obtained through the diet**
  - **Limited information to assess the risk of excessive taurine intake**
- **Glucuronolactone: 100 or > times > what normal diet provides**
  - **Effect of high glucuronolactone intake is unknown**





# Key Points



- **Manufacturers of DS do not have to demonstrate safety or effectiveness**
- **DS sold on military installations are not always safe, effective or legal**
- **Using DS may jeopardize mission success**
- **Do your homework before using DS to ensure safety**





# Key Points



- **Only high quality products with USP certification labels should be used**
- **Combining and stacking DS increase the potential for unsafe side effects**
- **Energy drinks are not regulated and the long-term effects of their combined ingredients are unknown**